Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 to 8. (Canceled).

9. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

10. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material

exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

11. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

12. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material

exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

13. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

14. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material

exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

15. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

16. (Previously Presented) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.